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ORIGINAL HABITAT AND ITS DISTRIBUTION IN THE WORLD

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The origin and distribution of groundnut was shrouded in mystery for centuries. It was as mysterious as the manner in which it produced the pods below the surface of the ground. There has been much confusion over this subject amongst the Botanists of the 19th century. Botanical surveys in Brazil, and archaeological excavations in Peru during the last century have yielded valuable and interesting facts which shed much light upon many doubtful points.

It is now definitely known that groundnut existed in South America as a cultivated crop long before the advent of the Spaniards in that continent. The basin of the mighty Amazon where the plant kingdom still reigns supreme and the highlands that surround this vast tropical forest have bestowed on mankind many valuable gifts. Four of the most important ones are potato, groundnut, cinchona and rubber. They are yielding products of great economic importance to the well-being and progress of the world. While potato and groundnut are feeding people with cheap and nutritious food, and quinine has made it possible to develop the resources of the tropics, rubber has become indispensable to the progress of modern civilization. The origin and movement of vegetable forms is as romantic as any chapter of human history, of discovery, of travel or of adventure.

It is here proposed to bring together all available information from scattered literature, in order to obtain a clear and connected idea as to the original habitat and subsequent distribution of groundnut.

It is not known how the word *Arachis* came to be applied to groundnut. The similarity of this word to the Greek word *arachidna* has led to a good deal of misunderstanding. The plant referred to by Pliny as *Oetum* and the long-rooted plant mentioned by Theophrastus were probably one and the

same plant which was generally known as *arachidua*. The ancient Egyptians used to gather these plants at the time of the inundation of the Nile for crowning their altars. It is now believed that the plant referred to was *Lathyrus amphicarpos* and not *Arachis*.

If the plant referred to by the ancient writers was groundnut, it is hard to understand how such a valuable crop as this has disappeared from Egypt. According to Alph. de Candolle, a plant which is provided with such an efficacious and very peculiar manner of germination does not seem in nature to become extinct. Forsköl has not mentioned it in his *Catalogue of Egyptian Plants*. Prospero Alpini has not described it. No reference to it has been made by Delile in his *Flora of Egypt*.

Linnaeus gave the habitat of groundnut as Surinam, Brazil and Peru. But he did not state whether it was wild or cultivated. In 1818 R. Brown did not believe that the plant mentioned by the ancient Greek authors was groundnut. He thought that it was not a cultivated crop in Egypt in those days. On the one hand, he believed that groundnut was taken from Africa to equatorial America, and on the other hand, mentions that it is referred to by some of the earliest writers on America, especially in Peru and Brazil. He considered that it was not unlikely that *Arachis* was indigenous both to Africa and America. If only one of the Continents were to be considered as its original home, he was of opinion that Africa was that home. If introduced to Africa it might have come from China and Japan through India by way of the Malay Archipelago. He was probably guided in this statement by the vernacular names of *China badam* (China almond) in Bengal and "*Manila Kottai*" in Madras, meaning manila nut.

Andre' Alvares de Almada, in his *Travels in 1594* and his *Travels in Senegambia in 1564*, states that he found considerable quantities of *Arachis* in the Archipelago of Bujagoz (Bissagos) off the West African coast. Fielto also thought that it was a native of Africa.

Father Merolla in 1642 described a plant in the Congo under the name *mandois* and said that it had three or four seeds together like those of vetches but they were produced underground. They were said to be as big as ordinary olive seeds and milk similar to that drawn from almonds was extracted out of them. It is probable that this plant was *Arachis*, and that by this time it had already spread over the West African coast. By the time Hawkins and other captains began to ship slaves to America, *Arachis* had already become established in Africa and usually the slave ships carried groundnut, Bombaranut (*Voandzia subterranea*) and sweet potatoes to feed the men. Along the slave and trade routes it began to spread all over America and wherever the conditions were favourable it rapidly got into cultivation.

According to Bretschneider no mention of *Arachis* is made in ancient Chinese works nor in the *Pent sao* published in the 16th century. Its introduction into China was probably in the 18th century. It has no antiquity in Asia. Rumphius saw it in Ambonia in 1691 and described it as *Chamæ balanus Japonicus*, says it was imported from Japan into the Indian Archipelago, but Thunberg does not mention it in his *Flora of Japan*. If it were of Chinese origin as Alph. de Candolle said, there was plenty of time for its introduction from China into Japan as these countries had dealings with one another for over sixteen centuries. Loureiro in 1790 called it a native of Cochin China. Forster does not mention it amongst the plants of small islands of the Pacific Ocean. The vernacular names in China, Japan, Dutch East Indies and Cochin China are all equivalent to earth-nut or earth-bean.

Japan — Nankin-nut

Java — Katiang ;

There is no name for it in Sanskrit and most of the modern vernacular names in India are all translations of the word groundnut. In Bengal, it is called *China badam* or China almond. In the South Arcot District of Madras where it is largely grown, it is called *Manilla Kottai*, and *Kottai* means a nut. It is explained that this name is a corruption

of "*Manali Kottai*" which means "the sandy soil nut". The plant is indeed referred to by the name *manali* in an allegorical sense in South Arcot. "Two sisters, *Nili* (Indigo) and *Manali* (groundnut) contended for predominance and eventually *Manali* prevailed." Indigo was largely grown in those parts. The discovery of synthetic Indigo ruined Indigo planters but in Southern India groundnut took its place, and began to spread rapidly with the increasing demand from Europe. The Tamil-cultivator is full of such allegorical statements. In other parts it is called *Ver Kadalai* or *Nila Kadalai* or other names equivalent to them, meaning ground gram or root gram. *Kottai* in Tamil means nut and the word *manilla* certainly seems to have other meanings than the one drawn from a rather romantic allegory. Either it may refer to the town Manila in the Philippines or it may be derived from the word *mani*, the American Indian name for groundnut in the language of the *Antilles* of Peru. It may be safely presumed that it is not a native of India. As regards Western Asia no mention of it has been made by any of the ancient Arab authors. Neither Asia nor the Pacific Islands seems to be the original home of *Arachis*.

In Cuba groundnut was found cultivated in gardens by Oviedo (1513-1524), Director of Mines. Jean de Lery described it unmistakably about the same time. French colonists sent in 1555 to the Brazilian coast by Admiral Coligny became acquainted with it by Garcilasso de la Vega in 1609 as being raised by the Indians as a crop under the name *yanchic*. "The fruit is raised underground", he says "and is very like marrow and has the taste of almonds." Groundnut was figured by Loeb in 1625. Maregraf and Piso described the plant and figured it in about 1648 A.D. They thought it was indigenous to Brazil and stated it was called by the Indians *mandubi*. They also quote Manardis, a writer of the 16th century as having indicated it in Peru under a different name, *anchic*. Maregraf does not say whether it was wild or cultivated, but Piso writes that the species was planted. Piso in his second edition gives the figure of a plant

imported from Africa into Brazil under the name *mandobi*, the fruit of which is similar to that of *Arachis*. The similarity of this name to *mandubi*, the Brazilian for *Arachis*, has probably led to confusion. The figures show a plant which has three leaflets and which looks like *L'ouandzia* so often cultivated in Africa, but the fruits are a little longer than in that genus and contain two or three seeds instead of one or two. Piso, however, drew a distinction between the two subterranean seeds, Brazilian and African. Joseph Acosta mentions it in 1598 amongst the indigenous plants of South America and gives the name *mani* mentioned above. *Arachis* is not ancient in Guiana, West Indies or Mexico. Aublet mentions it as being cultivated in the Isle of France. According to de Candolle, Hernandez does not mention it, but Sloane saw it cultivated in Jamaica from seeds got from Guiana.

In 1825, de Candolle admitted that the origin of *Arachis* was undoubtedly American. Bentham has shown that there are six species belonging to this genus in Brazil. *A. pusilla* is found growing in shady places on the *serra jacobina* in the province of Bahia. *A. prostrata* is found creeping on the surface in open sandy places, in South Brazil, Uruguay and Paraguay. *A. villosa*, a perennial with a woody stalk, is found in great abundance on dry, loose sand near Rio de Janeiro, and in South Brazil and Uruguay. *A. glabrata* is found in marshes in the province of S. Paulo. *A. marginata* is found in sub-humid places on the banks of the Rio Grande and Rio Pardo. *A. tuberosa* with perennial-rhizomes is found near Cimapura on the Rio Pardo. *A. guaranitica* was found by Chodat in the hollows of Siera de Maracay in the Zebsles Mts. As Alph. de Candolle said: "It is impossible for one species common to both the hemispheres to have all the other well-known species placed in a single region of America. It would be a great exception to the law of Geographical Botany." In no excavation in Africa has *Arachis* been found either in the graves or in other places. While Pizzaro made no mention of *Arachis* as one of the seeds he found in the

tombs of Ancon, Rochebrune states that he found groundnut amongst a large number of edible and commercial plant products. These tombs are about 25 kilometres to the north of Lima in Peru. Rochebrune gives an ample list of the cultivated plants and other plant products in use before the Conquest of Peru by the Spaniards. J. Adams gives a figure of the groundnut found in the tombs of this place. E. G. Squier, a U.S. Commissioner to Peru, gives a vivid description of his discovery in the tombs at Pacha Camac, South of Lima. "During my residence in Lima I visited the ruins of Pacha Camac, twenty miles south of the capital. . . . Pacha Camac is one of the most notable spots in Peru, for here, as we are told by the old chroniclers, was the sacred city of the natives of the coast before their conquest by the Incas In Pacha Camac, the ground around the temple seems to have been a vast cemetery. Dig almost anywhere in the dry nitrous sand, and you will come upon what are loosely called mummies but which are the desiccated bodies of the ancient dead I will record what I found in a single tomb, which will illustrate how a family not rich, nor yet of the poorest, lived in Pacha Camac. . . . Besides the bodies, there were a number of utensils, and other articles in the vault ; among them half a dozen earthen jars, pans, and pots of various sizes and ordinary form. One or two were still incrustated with the soot of the fires over which they had been used. Every one contained something. One was filled with groundnuts familiar to us as peanuts ; another with maize, etc., all except the latter in a carbonized condition." Since the natives of the coast inhabited the country long before the Incas and in their time groundnut was a crop of some importance and daily use it must have got into cultivation in remote ages. The evidences revealed at Ancon and Pacha Camac indicate for groundnut a great antiquity as a cultivated crop in South America, or at least they prove the existence of the plant in South America before the discovery of that Continent by Europe. All floras of Asia and Africa mention *Arachis hypogaea* as a cultivated crop. Bentham after satisfying himself that it had not been found wild in

America or elsewhere, suggests that it is perhaps a form derived from one of the six other species found wild in Brazil; but does not say from which.

If in addition to the discovery of groundnut in the graves of Peru a large number of varieties were under cultivation or allied wild forms were present in that region, one would at once fix Peru as the probable original habitat. Such evidences are, however, wanting and it is likely that the cultivated forms were secured from the neighbouring tribes living on the eastern slopes of the Andes.

A large number of species belonging to the genus *Arachis* is still found in various places in Brazil from the regions round the mouth of the Amazon, along the east coast to Uruguay and on the slopes of mountains in the interior as far as Paraguay. Indian tribes in Brazil grow groundnut in several localities and they must have had it in cultivation from remote times. The fact that no remains of this plant have been found in tombs in this region does not disprove this assumption. In moist tropical countries few remains of ancient civilization can be found. The capital of Pataliputra in the Indo-Gangetic plain was one of the biggest cities in the world before the Christian Era. But no trace of it is left behind. Death and decay remove all traces of previous activities of man in these regions.

Prof. I. Baldrati states that in 1905, the *Boletim de Agriculture* of Sao Paulo in Brazil gave a description of a species of groundnut under cultivation which was different from that of *Arachis hypogaea*. In 1926 Lobbe described a species of groundnut cultivated by the Nambyquara Indians as *A. nambyquara*. This was discovered by the Roxdon Commission in the course of their botanical explorations in the region. Prof. F. C. Hochene introduced it into the State of Sao Paulo, and from there it has been introduced into the United States. The seeds vary in shape and colour and the plant gives a yield 3 or 4 times as large as that of *A. hypogaea*. Seeds of *A. nambyquara* are put to the same use as that of groundnut seeds.

The presence of a number of species of *Arachis* in their wild state, the cultivation of groundnut by the Indian tribes and the discovery of other species of *Arachis*, which are under cultivation and the products of which are put to the same use as groundnut go to show that the original habitat of this plant is Brazil; it has spread from there along the great ocean routes to all parts of the World.

Presuming Brazil as the origin of *Arachis hypogaea*, its movement can be fairly well reconstructed and followed.

In South America *Arachis* spread from Brazil to Peru in the west, to Argentine in the south and Guiana in the north. From Guiana it seems to have been introduced to Jamaica, Cuba and some other W. India Islands. From Peru along the land trade routes across the Isthmus of Panama *Arachis* seems to have gone to Costa Rica and Mexico. As already stated, the Peruvians called the plant *yanchi* and the Spaniards called it at first *mani*, a name given to it by the Antilles, and afterwards *mandubi*. They borrowed from Mexico the name *caca huatl* which the Aztecs used for *coca*.

The introduction to North America did not take place directly from South America. Slave ships brought back *Arachis* from the west coast of Africa to the eastern shores of the States of Carolina and Virginia. After the Civil War soldiers returning home took it north and south from Virginia and grew it in small patches as a garden crop. Its extended use and utility as a rotation crop in cotton fields are making it a very important one in the Gulf States.

From Brazil it went to the west coast of Africa. From Senegal and Gambia it reached the upper reaches of the Niger and spread along the coast as far down as Angola. From the mouth of the Niger it moved on towards Lake Tchad, Darfur and Kordafan to Sudan. From Sudan it spread to Egypt in the north, to Eritrea in the east and to Uganda in the south. The existing name in Egypt *Fad Sudani* suggests that it was got from Sudan. In 1834 it was recorded by N. Bove in Cairo that groundnut was a botanical curiosity.

Mohammed Ali seems to have introduced it into Egypt after one of his expeditions to Sudan.

The name *tiga* is an abbreviation of *mantiqa*, a word used by the *mandingo* race from Senegal to the borders of Kong in the hinterland of the Ivory Coast. J. Adam says that *mantiqa* in Portuguese signifies butter and the Portuguese name seems to have been assimilated into the local Mandingo language. This name is not known in Darfur, Kordafan or in Sudan and possibly they did not receive the nut from the upper reaches of the Nile. On the other hand, in northern Nigeria the Hausa name for groundnut is *geda*. It is not even similar to the word *Paruru*, the name given for *Voandzia* which is commonly grown there as Bambaranut. How the name *geda* came to be applied to groundnut is not known.

Sudan seems to have got the nut from the Hausa land. The nuts themselves are like those grown in Senegal and Brazil with spreading branches. Caravans from the Niger water-shed frequently penetrated into Egyptian Sudan with Kola nuts. Groundnut must have been introduced by these caravans intentionally or by accident. J. A. Gillan, Government Inspector in Kordafan, gives an Arab legend regarding its introduction from the West. "In pre-Mohammedan times a certain *Wad el Soda* went from Arabia to Dar Borgu in Northern Nigeria, where he became *Hakim el Balad*. During his rule there was a great famine, and many died for want of food. One day a man, in milking a cow, accidentally spilled some milk, and shortly afterwards a previously unknown plant sprang up from the spilled milk, and the nuts which were yielded from this plant seem to have saved the people from complete starvation." This plant according to the legend was the original *ful sudani*, called *abudhin* or *abu leban*. The colloquial name for the plant is still *abudhin* in Kordafan. Old inhabitants agreed that it came from the West, but the date of introduction and the exact locality were not known to them. They say in Kordafan that it was brought by pilgrims going west by way of Darfur.



R. Brown's statement that groundnut reached Africa from the East is also probable in that the east coast of Africa from Mozambique to Zanzibar received their consignment from the Malay Islands and the nut had reached those islands from Peru. The northern coast of Africa received its supply from Portugal and Spain. It is now grown practically all over Africa where climate and soil are suitable. Zones of heavy rainfall in the Congo Valley and the coastal plains of West Africa round the Gulf of Guinea and the vaults of South Africa with their early frosts are not suitable for its successful growth. But in the valleys of Senegal and Gambia, in the upper reaches of the Niger and round Kano it has become a crop of great commercial importance.

From Peru it journeyed across the Pacific along with the expedition of Magellan in 1519-21 to the Molucca Islands and the Philippines. From the Philippines groundnut was taken to Indo-China and Japan through China. In some parts of Japan it is even now known as Nankin mame or Nankin nut. From Celebes in the Moluccas, it spread to all the Malayan Archipelago and to the east coast of Australia. From these islands or from China it was taken to the Malay peninsula, Siam, Burma, Bengal and the east coast of South India. By about 1800 it was already under cultivation even in the interior districts of Mysore. In another line it travelled from the Malay Archipelago to Ceylon on one side, and across the Indian Ocean to Madagascar and to Mozambique on the other. From these places it slowly spread to all the parts of the east coast of Africa including the coastal inlands. A study of the herbarium specimens at Kew shows a remarkable resemblance between plants from Paraguay, Bolivia, Guatemala, Mexico, the Philippines, China, Java, Madagascar and Mozambique. The old Mysore variety of South India also is very much like these in having the stems hairy and with a tinge of violet colour. In about 1800 the seeds of groundnuts were taken from Mozambique to the West Coast of India. When the groundnut was badly deteriorating in South India, consignments from Mozambique and

Mauritius saved the groundnut industry of the country and helped to stimulate its cultivation. Till the oil seed trade in France developed and exploited the possibilities of groundnut, there was no great demand for groundnut in India. When the Suez Canal was opened a great stimulus was given to the export trade of groundnuts in India and the crop spread to all the districts in peninsular India. It has now become a very important commercial crop in the Peninsula building up the prosperity of the ports of Madras, Pondicherry, Cuddalore and other smaller seaside towns having a coastal trade.

This movement both eastward and westward from America meeting in the African continent was the main cause for a good deal of confusion in attempts to discover its place of origin and its distribution.

At present its area is enormous and is still increasing. Its utility, as an edible nut producing a high grade oil, is extending its cultivation in the tropics and in various places it is becoming recognised as a useful crop for rotation with cereals. To dry land farmers or farmers who have no irrigated lands to raise crops like sugarcane, groundnut is becoming important as a money crop. It is even saving the cotton plantations after the spread of the Bollweevil in the United States of America. The increased consumption of peanuts in various forms and as peanut butter in the United States of America has been a great incentive to its extended cultivation there.

Groundnut was grown for the first time in Europe by Stisser in 1697 in Brunswick. It was grown under glass in England in 1712. In 1723 it was grown in the Royal gardens at *Mont Pillier*, but it soon died out. Groundnut was again grown in England in 1774. In 1769 Sir William Watson showed pods and oil to the Royal Society and read a memoir communicated to him by George Brownrigg of N. Carolina. In 1787 great quantities of groundnut were brought to Spain and Portugal from U. S. A. and cultivated. Again Don Ulloa, Archbishop of Valentia, imported large quantities into Europe. Tenore tried it in Italy. In 1801 Lucien Bonaparte,

the ambassador at the Court of Madrid, sent seeds to M. Mechin, Prefect of Landes (prov. of Bordeaux). It succeeded on sandy soils. M. Mechin circulated a detailed account of its cultivation. It was largely grown in south-eastern part of France but the political troubles during 1805 to 1815 checked its spread and eventually it dropped out of cultivation. In 1807 the oil of groundnut was used for soap-making and as a substitute for almond oil. In 1820 and 1822, owing to the destruction of olive gardens by frosts, attempts were made in France to revive its cultivation but, owing to bad organization, there was no market for the oil and the attempt failed. In 1839-40, M. Chaise grew it successfully in France on about twelve and a half acres. Experimental trials were also made at Dase. Losonez grew it successfully in Hungary. The crop was good but it did not pay. At present it is grown as a field crop in Spain and Italy. Other parts of Europe have not the heat necessary for growing it as a field crop in the open.

Groundnut is now grown on a large scale in all the sub-tropical and tropical countries mentioned below, but the most important ones are U.S. of America, India, Senegambia, French Sudan, Nigeria and China.

1. *Europe*.—Portugal, South of Spain specially in Valencia, parts of Italy, Sicily and Crimea.
 2. *Africa*.—Senegal, Gambia, Seraleone, Nigeria, Angola, Transvaal, Rhodesia, Nyassaland, Mozambique, Madagascar, Natal, British East Africa, Eritrea, Sudan, Kordafan, Darfur and Egypt.
 3. *Asia*.—India, specially in Madras, Bombay, Mysore and Hyderabad; Burma, Malay States, Siam, Annam, Tonkin and Cambodia; the following ports in China export it:—Chinkiang, Canton, Shanghai, Chefoo, Pakhoi, Teinshin, Swatow, Szechwan, Lungchow, and Hong Kong; and Japan.
- Malay Archipelago*.—Java, Philippines and Celebes.

4. *Australia*.—New South Wales, ~~Queensland and the~~ northern territories of South Australia.
5. *Islands of Pacific Ocean*.—Hawaii and Fiji specially.
6. *North America*.—States of U.S.A., viz., South California, Arizona, New Mexico, Texas, Oklahoma, Indiana, Louisiana, Arkansas, Mississippi, parts of Missouri and Kentucky, Tennessee, Alabama, Florida, Georgia, North and South Carolina, Virginia and Maryland; Mexico, Central American States.
7. *South America*.—All over South America down to about 30° S. Latitude.
8. *West Indies*.—Jamaica, Cuba, Antilles and Barbados.

Consumption of groundnut in Europe is ever on the increase. Its rich oil is wanted for the manufacture of margarine, soaps, and as a substitute for olive oil. The valuable oil-cake useful for fattening animals and for feeding milch cattle is ever in demand and is becoming more and more popular every day. As a manure for plantations in the Tropics for rice fields, sugarcane and market gardening crops, its cake, rich in nitrogen, is eminently suited. Round about Paris market gardeners use it freely. The demand for all these products is so great now that the world's supply is not sufficient and the prices are mounting. To meet this increasing demand fresh areas are being brought under cultivation every year. In large parts of Africa, the cultivation is still primitive and in other places heavy taxation, want of transport facilities and adequate supply of labour are checking greater production. Early ripening varieties are required for the Veldts of South Africa which suffer from early frosts, and for Argentina. The United States of America produces groundnut as a seed crop only in the warmer regions. In other parts it is grown only for fattening pigs. An improvement in the general methods of cultivation, harvesting and marketing; better transport facilities by way of roads and railways in places of production and shipping facilities to take the produce

to the European markets, building up of suitable new types of plants for various localities, will stimulate the production of this important crop and will make available to the world's need more of this nutritious, yet cheap, food.

